

IN THE CLAIMS:

The status of the claims is as follows:

1. (previously presented) A method of preparing a sample chip and observing a wall surface thereof, comprising the steps of:

a first step of etching a preselected portion of a sample and an area surrounding the preselected portion of the sample by irradiating the sample with a focused ion beam to form a sample chip having a wall surface formed with stepped portions;

a second step of taking out the sample chip from the sample; and

a third step of observing the wall surface of the sample chip with a scanning probe microscope.

2. - 35. (canceled).

36. (previously presented) A method of preparing a sample chip and observing a wall surface thereof, comprising the steps of:

a first step of etching a preselected portion of a sample and an area surrounding the preselected portion of the sample by irradiating the sample with a first focused energy beam to form a sample chip;

a second step of picking-up the sample chip from the sample;

a third step of irradiating a wall surface of the sample chip with a second focused energy beam to thereby etch the wall surface; and

a fourth step of observing the etched wall surface of the sample chip using a scanning probe microscope.

37. (previously presented) A method according to claim 36; wherein the second step further comprises the step of securing the sample chip to a sample chip holder after the sample chip is picked-up from the sample so that the wall surface of the sample chip etched in the third step and observed in the fourth step faces in an upward direction.

38. (previously presented) A method of according to claim 36; wherein the first focused energy beam is a focused ion beam, and the second focused energy beam is an argon ion beam.

39. (previously presented) A method of according to claim 38; wherein the first step includes the step of processing the sample chip to form stepped portions in the wall surface of the sample chip.

40. (previously presented) A method of preparing a sample chip and observing a wall surface thereof, comprising the steps of:

a first step of etching a preselected portion of a sample and an area surrounding the preselected portion of the sample by irradiating the sample with a first focused energy beam to form a sample chip;

a second step of taking out the sample chip from the sample;

a third step of irradiating a wall surface of the sample chip with a second focused energy beam thereby to etch the wall surface;

a fourth step of observing the etched wall surface of the sample chip using a scanning probe microscope;

a fifth step of irradiating the observed wall surface of the sample chip with the first focused energy beam to thereby to etch the observed wall surface; and

a step of repeating the third to fifth steps a preselected number of times.

41. (previously presented) A method according to claim 40; wherein the first focused energy beam is a focused ion beam, and the second focused energy beam is an argon ion beam.

42. (previously presented) A method according to claim 41; wherein the first step and/or the fifth step includes the step of processing the sample chip to form stepped portions in the wall surface of the sample chip.

43. (previously presented) A method of preparing a sample chip and observing a wall surface thereof, comprising the steps of:

a first step of etching a preselected portion of a sample and an area surrounding the preselected portion of the sample by irradiating the sample with a first focused energy beam to form a sample chip;

a second step of taking out the sample chip from the sample;

a third step of irradiating a wall surface of the sample chip with a second focused energy beam thereby to etch the wall surface;

a fourth step of observing the etched wall surface of the sample chip using a scanning probe microscope;

a fifth step of irradiating the observed wall surface of the sample chip with the first focused energy beam to thereby to etch the observed wall surface; and

a step of repeating the fourth and fifth steps a preselected number of times.

44. (previously presented) A method according to claim 43; wherein the first focused energy beam is a focused ion beam, and the second focused energy beam is an argon ion beam.

45. (previously presented) A method according to claim 44; wherein the first step includes the step of processing the sample chip to form stepped portions in the wall surface of the sample chip.

46. (previously presented) A method according to claim 43; further comprising the step of forming the sample chip with a rectangular parallelepiped shape in an asymmetric form to facilitate identification of the wall surface of the sample chip in the fourth step.

47. (previously presented) A method of preparing a sample chip and observing a wall surface thereof, comprising the steps of:

providing a sample having a multi-layered structure made of different materials;

irradiating the sample with a focused energy beam to form a sample chip while a wall surface of the sample chip is gas-assist-etched so that the wall surface is formed with stepped portions due to differences in the materials of the multi-layered structure of the sample;

taking out the sample chip from the sample; and
observing the wall surface of the sample chip having
the stepped portions with a scanning probe microscope.

48. (previously presented) A method of according to
claim 47; wherein the focused energy beam is a focused ion
beam.